

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-3 are presently active in this application, Claims 1 and 4 having been amended by the present amendment, Claim 4 having been withdrawn from consideration as directed to a non-elected invention.

In the outstanding Official Action, Claim 4 was withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a non-elected invention; Claims 1-3 were rejected under 35 U.S.C. 103(a) as being unpatentable over Spierings et al (6,045,715, hereinafter called "Spierings") in view of Chen et al (5,087,481, hereinafter called "Chen").

In light of the outstanding grounds for rejection, Claim 1 has been amended to clarify the claimed invention consistent with Applicants' disclosure, for example, Figs. 1C and 1D and the related discussion at page 6, lines 1-11 of the specification. No new matter has been added.

Briefly recapitulating, Applicants' invention is directed to a method of manufacturing a liquid crystal display device, including (1) two different etching treatments, i.e., faster and slower etching rate treatments, and (2) the two different etching treatments are carried out in two separate etching process machines. The faster etching rate treatment is performed for a rough process of the substrate while the slower rate treatment is performed for a fine finishing process of the substrate. As explained the specification, "even though there are origins of pits, 14, e.g., small defects and micro-cracks on the surfaces 11a and 12a, the origins of pits 14 are removed from the surfaces because the etching runs faster than the pits spread from the origins. ... Since the second etching solution 24 used in the second etching

process machine 22 is relatively slow in etching rate, it takes time o gradually and uniformly etch the surfaces 11a and 12aa until they become flat.”¹

Spierings disclose a method of post-etching a mechanically treated substrate in which first a mechanical treatment is performed and then a wet-chemical etching treatment is performed to render the wall of the substrate microscopically less rough. Such a method thus entails a two-step treatment, i.e., a rough mechanical treatment and a less rough (finer) wet-chemical etching treatment.

Further, as the outstanding Office Action points out, Spierings also teaches a general etching process such as etching rates, etching time and deviation of etching depth.

However, as noted above, according to claimed invention, the faster etching rate treatment of Applicants’ invention is performed for a rough process of the substrate while the slower rate treatment is performed for a fine, finishing process of the substrate. Thus, the two different treatments of the present invention is essentially different in nature and process from those of the substrate of Spierings.

In addition, the two different treatments of the present invention are sequentially performed in two separate etching process machines, so that the treatments are efficiently performed in a manufacturing facility of the substrate. Therefore, in view of these differences, it is respectfully submitted that amended Claim 1 is clearly not obviated by Spierings, and on the contrary is patentable over Spierings.

Chen disclose that a glass disk is subjected to a chemical or gentle mechanical polishing step to remove microcracks or scratches in the disk surface prior to chemically texturing the disk. The Chen disclosure, however, clearly does not teach or suggest the two different etching treatments as recited in amended Claim 1. Thus, it is respectfully submitted


¹ Specification, page 6, lines 21-24 and page 7, lines 7-19.

that the combined teachings of Chen and Spierings fail to obviate the claimed invention invention. Therefore, it is respectfully submitted that amended Claim 1 and dependent claims 2 and 3 are patentable over Chen or/and Spierings

Consequently, in view of the present amendment and in light of the above comments, no further issues are believed to be outstanding, and the present application is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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